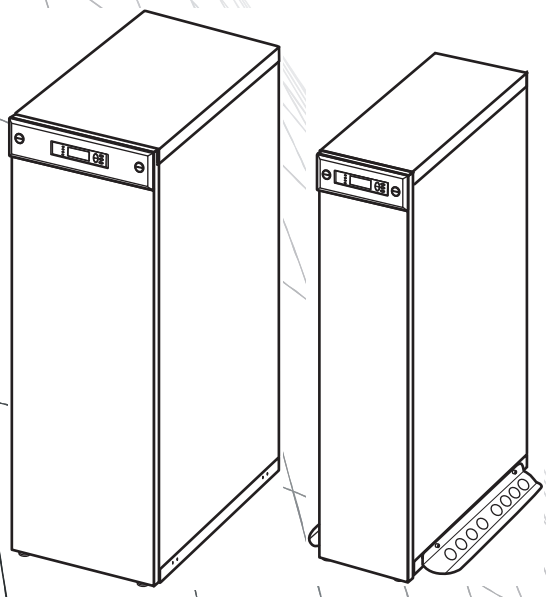
APC
by Schneider Electric

Quick Reference

Smart-UPS® VT

10-30 kVA 208 V



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Model List

UPS for up to 2 Battery Modules

- Smart–UPS VT 10 kVA 208 V
- Smart–UPS VT 15 kVA 208 V

UPS for up to 4 Battery Modules

- Smart–UPS VT 10 kVA 208 V
- Smart–UPS VT 15 kVA 208 V
- Smart–UPS VT 20 kVA 208 V
- Smart–UPS VT 30 kVA 208 V

Features

Availability

- Dual mains input: Increases availability by allowing the UPS to be connected to two separate power sources
- Scalable runtime: Allows additional runtime to be quickly added as needed
- Hot-swappable batteries: Ensure clean, uninterrupted power to protected equipment while batteries are being replaced
- Generator compatible: Ensure clean, uninterrupted power to protected equipment when generator power is used
- Automatic internal static bypass: Supplies utility power to the connected loads in the event of a UPS overload condition or fault
- Battery modules connected in parallel: Delivers higher availability through redundant batteries

Serviceability

- Batteries that can be replaced by qualified personnel: Increases availability by allowing qualified personnel to perform upgrades and replacement of the batteries reducing the Mean Time To Repair (MTTR)
- Automatic self-test: Periodic battery self-test ensures early detection of a battery that needs to be replaced
- Shippable with modules installed: Enables pre-installation UPS staging and testing and faster installation
- Modular design: Provides fast serviceability and reduced maintenance requirements via self-diagnosing, field-replaceable modules

Manageability

- Network manageable: Provides remote management of the UPS over the network
- InfraStruXure Central Compatible: Enables centralized management via InfraStruXure Central
- LCD: Alphanumeric display which displays system parameters and alarms
- Audible alarms: Provides notification of changing utility power and UPS conditions
- Programmable frequency: Ensures compatibility with different input frequencies
- LED status indicators: Quickly understand unit and power status with visual indicators
- SmartSlot: Customize UPS capabilities with managements cards

Total Cost of Ownership

- Input power factor correction: Minimizes installation costs by enabling the use of smaller generators and cabling
- Temperature-compensated battery charging: Prolongs battery life by regulating the charge voltage according to battery temperature
- Manual maintenance bypass: Reduces installation costs by eliminating the need for an external mechanical bypass
- Intelligent battery management: Maximizes battery performance, life, and reliability through intelligent, precision charging

Protection

- Frequency and voltage regulation: Gives higher application availability by correcting poor frequency and voltage conditions without using the battery
- Safety-agency approved: Ensures the product has been tested and approved to work safely with the connected service provider equipment and within the specified environment. UL, FCC, CE, C-Tick approvals
- Cold-start capable: Provides temporary battery power when the utility power is out

Settings

Default Settings

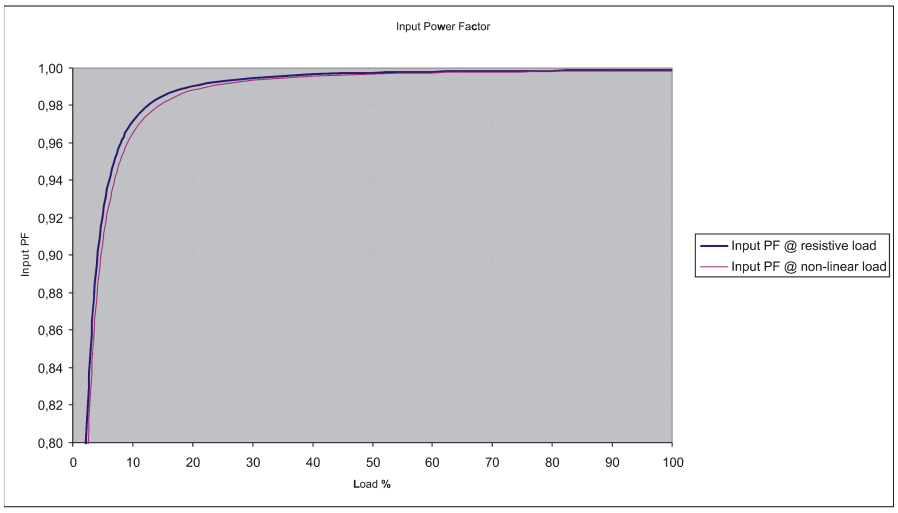
System Settings (only updated when in load disconnect)	Default setting
Nominal output voltage (ph-ph)	208 V
Frequency	60 Hz
Frequency self-detect mode	Auto
Frequency range	±10 Hz
3-wire mode enabled	Off
Frequency slew rate	1 Hz/s
Generator charge percentage	100%
Cyclic charge mode enabled	Off
Auto start	On
Parallel UPS number	1
No. of parallel UPSs	1
MBP present	No
Shutdown mode (can only be set from service port)	Never
Shutdown setting	
Low battery duration	2 minutes
Shutdown delay	20 seconds
Turn on delay	0 seconds
Return of battery capacity	0%
Alarm settings	
Load alarm threshold	System power rating
Runtime alarm threshold	0 (disabled)
Parallel redundancy alarm threshold	n+0 (disabled)
Other settings	
Battery self test	Off
External battery capacity	0 Ah
Display settings	
Display language	English
Display contrast	0
Display beeper state	PwerFail+30
Display beeper volume	Low
Display key click	Off

AC Input

Specifications

	10 kVA		15 kVA		20 kVA		30 kVA	
	208 V	220 V	208 V	220 V	208 V	220 V	208 V	220 V
Connection type	Hard Wire 5-wire (3PH + N + G)							
Input frequency (Hz)	40–70							
I thd	< 5% at full load							
Nom input current (A)	24.3	22.9	36.5	34.6	48.2	45.5	72.9	68.9
Max input current (A)	26.7	25.2	40.2	38.0	53.0	50.1	80.1	75.8
Input current limitation (A)	32.8	32.8	49.5	49.5	65.2	65.2	98.8	98.8
Input power factor correction	> 0.98 at load > 50%							

Input Power Factor



AC Output

Specifications

	10 kVA		15 kVA		20 kVA		30 kVA	
	208 V	220 V	208 V	220 V	208 V	220 V	208 V	220 V
Connection type	Hard Wire 5-wire (3PH + N + G)							
Output capacity	150% for 1 minute (normal operation) 125% for 10 minutes (normal operation) 150% for 1 minute (battery operation) 125% for 10 minutes (battery operation) 110% continuous (bypass operation) 800% for 500 ms (bypass operation)							
Voltage tolerance	160-240 V for 208 V systems 160-253 V for 220 V systems							
Nom output current (A)	27.8	26.2	41.6	39.4	55.5	52.5	83.3	78.7
Output frequency (sync to mains)	57-63 Hz for 60 Hz nominal							
Slew rate (Hz/Sec)	0.25-1							
Total Harmonic Distortion (THD)	< 1.5% linear < 3.5% non-linear							
Output power factor	0.8							
Dynamic load response	+/- 5%							
Output voltage regulation	+/- 1%							

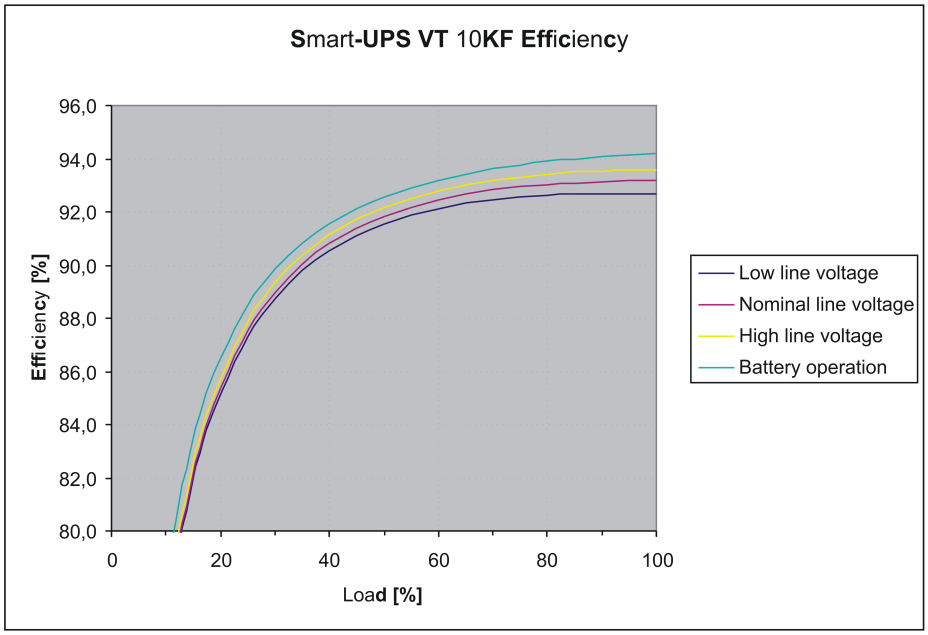
Efficiency

System	25% load	50% load	75% load	100% load
10 kVA 208 V	87.5	91.8	92.9	93.2
15 kVA 208 V	90.4	92.9	93.1	93
20 kVA 208 V	88.6	92.4	93.3	93.4
30 kVA 208 V	91.2	93.3	93.3	93.1

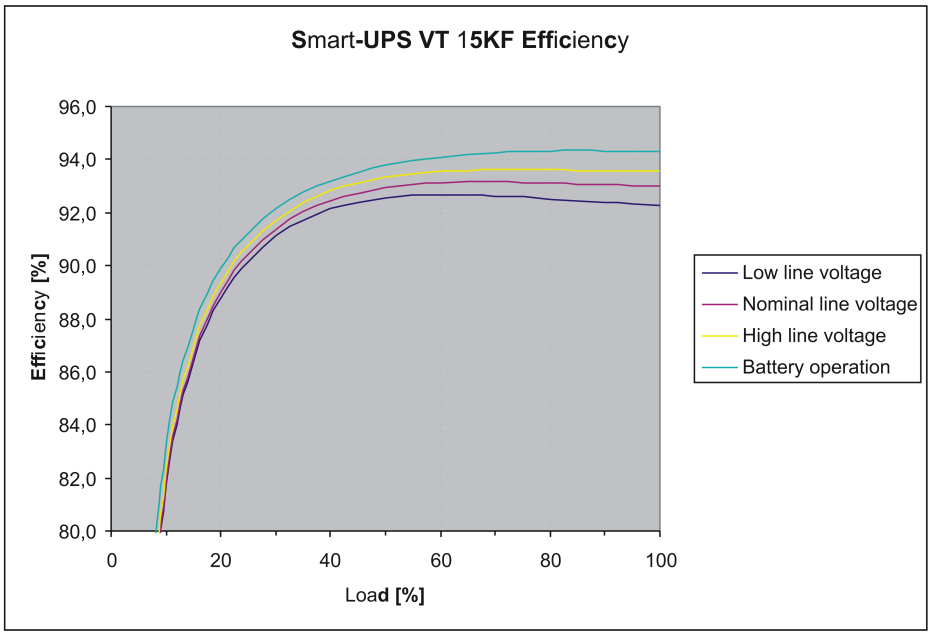
Efficiency Curves

Low line is 181 V and high line is 235 V.

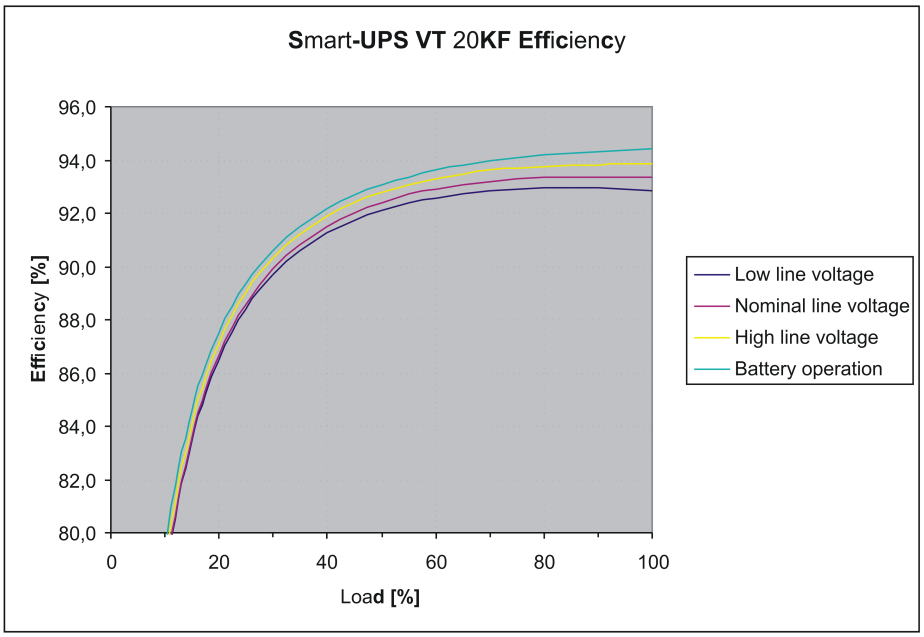
10 kVA 208 V



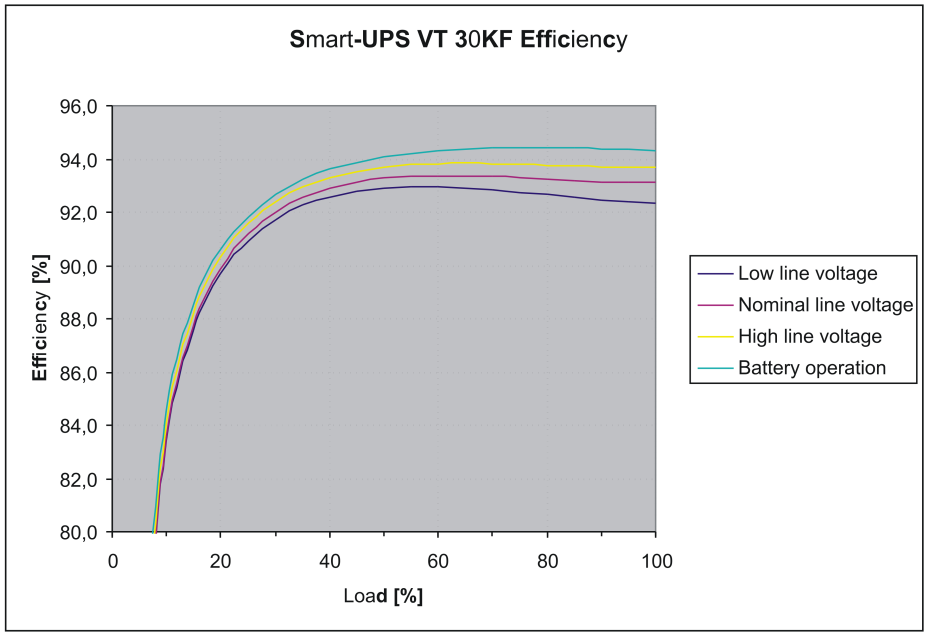
15 kVA 208 V



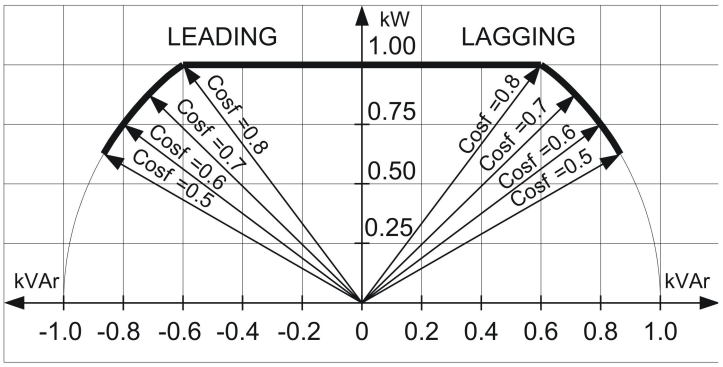
20 kVA 208 V



30 kVA 208 V



Derating due to Load Power Factor



Environmental

Operating Temperature	0 - 40 °C (32-104ºF)
Storage Temperature with batteries	-15 - 45 °C (-5-113ºF)
Storage Temperature without batteries	-30 - 70 °C (-22-158ºF)
Operating Relative Humidity	0 - 95%, non-condensing
Storage Relative Humidity	0 - 95%, non-condensing
Operating Elevation	0-1000 m (0-3000 ft): 100% load 1000-1500 m (3000-4500 ft): 95% load 1500-2000 m (4500-6000 ft): 91% load 2000-2500 m (6000-8000 ft): 86% load 2500-3000 m (8000-10000 ft): 82% load
Storage Elevation	0-15000 m (0-50000 ft)
Audible noise at 70% load – 1 meter from surface of unit 10-15 kVA 208/220 V 20-30 kVA 208/220 V	42.3 dBA 46.2 dBA
Audible noise at 100% load – 1 meter from surface of unit 10-20 kVA 208/220 V 30 kVA 208/220 V	51.3 dBA 55.0 dBA
Protection Class	?
Colour	Black
Online Thermal Dissipation kw (BTU/hr)	10 kVA batteries fully charged: 0.57 (1938) 10 kVA batteries charging: 0.65 (2211) 15 kVA batteries fully charged: 0.88 (2989) 15 kVA batteries charging: 0.99 (3398) 20 kVA batteries fully charged: 1.24 (4238) 20 kVA batteries charging: 1.42 (4852) 30 kVA battery fully charged: 1.73 (5896) 30 kVA battery charging: 1.97 (6715)

Batteries

Specifications

Type	VRLA
Nominal voltage (VDC)	+/- 192
Float voltage (VDC)	+/- 219
End of discharge voltage (VDC)	+/- 154
Battery current (at full load)	69.4 A at +/– 192 V
Max. current (at end of discharge)	86.6 A at + 154 V
Max. charging power	10 kVA: 800 15 kVA: 1200 20 kVA: 1600 30 kVA: 2400
Typical re-charge time	5 hours
End voltage	1.6-1.75 V/cell (automatic, depending on load)

Efficiency DC to AC

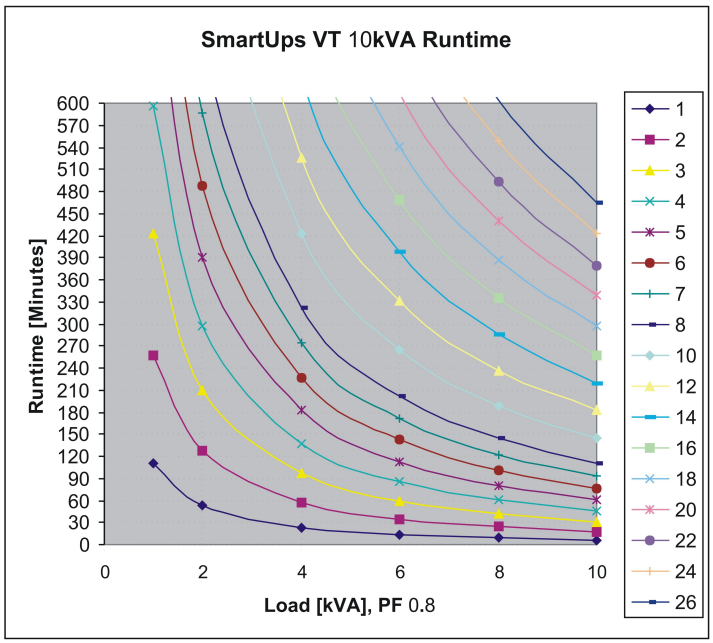
	10 kVA		15 kVA		20 kVA		30 kVA	
	208 V	220 V	208 V	220 V	208 V	220 V	208 V	220 V
Efficiency at nominal battery voltage (%)	94.3	94.4	94.3	94.4	94.3	94.4	94.3	94.4

Battery Run-Times — APC Battery Solution

Note:

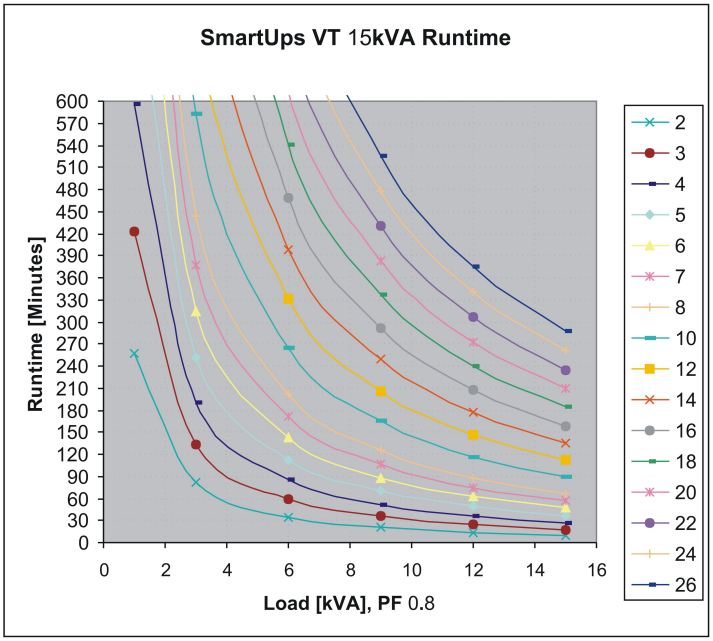
"# of battery shelves" indicates the total number of populated battery shelves in the UPS and Battery Enclosure.

10 kVA 208 V Typical Performances



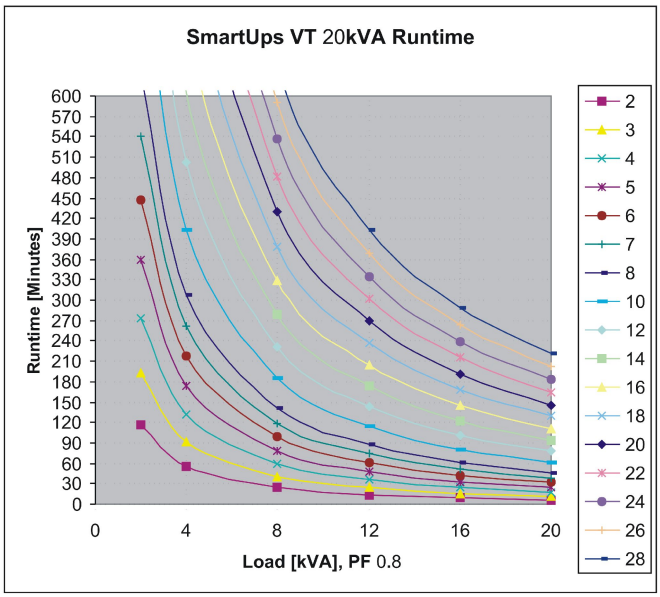
	Load kVA					
# of bat shelves	1	2	4	6	8	10
1	110	53	23	13	9	6
2	258	128	58	35	24	18
3	422	210	97	60	42	31
4	597	298	138	86	61	46
5	781	390	182	113	80	61
6	973	487	227	142	101	77
7	1172	586	274	172	122	93
8	1376	689	322	202	144	110
9	1586	794	372	233	167	128
10	1800	901	422	265	189	145
11	2019	1011	474	298	213	163
12	2241	1123	526	331	237	182
13	2468	1236	580	365	261	200
14	2697	1352	634	399	286	219
15	2931	1468	689	434	310	239
16	3167	1587	745	469	336	258
17	3406	1707	801	505	361	278
18	3648	1829	858	541	387	298
19	3893	1951	916	577	413	318
20	4140	2075	975	614	440	339
21	4390	2201	1034	652	467	359
22	4642	2327	1093	689	494	380
23	4897	2455	1153	727	521	401
24	5154	2584	1214	765	548	422
25	5413	2714	1275	804	576	444
26	5674	2845	1337	843	604	465

15 kVA 208 V Typical Performances



	Load kVA					
# of bat shelves	1	3	6	9	12	15
1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	258	81	35	21	14	10
3	422	134	60	36	25	18
4	597	191	86	52	36	27
5	781	251	113	70	49	37
6	973	314	142	88	62	47
7	1172	378	172	106	75	57
8	1376	444	202	125	88	67
9	1586	512	233	145	102	78
10	1800	582	265	165	117	89
11	2019	653	298	185	131	100
12	2241	725	331	206	146	112
13	2468	799	365	227	161	123
14	2697	873	399	249	177	135
15	2931	949	434	270	192	147
16	3167	1026	469	292	208	159
17	3406	1103	505	315	224	171
18	3648	1182	541	337	240	184
19	3893	1261	577	360	256	196
20	4140	1342	614	383	273	209
21	4390	1423	652	407	290	222
22	4642	1505	689	430	306	235
23	4897	1587	727	454	323	248
24	5154	1671	765	478	341	261
25	5413	1755	804	502	358	274
26	5674	1840	843	526	375	288

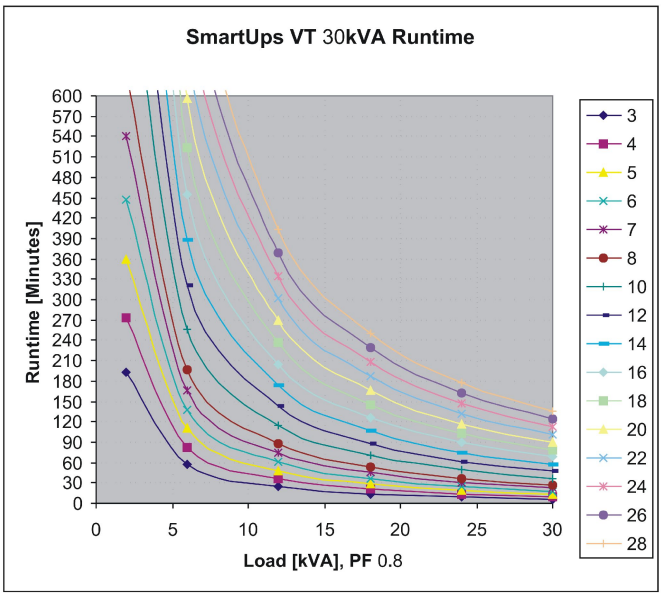
20 kVA 208 V Typical Performances



	Load kVA					
# of bat shelves	2	4	8	12	16	20
1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	117	55	24	14	9	6
3	193	92	41	24	16	12
4	274	132	59	36	25	18
5	359	174	78	48	33	25
6	448	217	99	61	42	32
7	540	262	119	74	52	39
8	634	308	141	87	61	46
9	731	355	163	101	71	54
10	830	404	185	115	81	62
11	931	453	208	129	91	70
12	1034	503	231	144	102	78
13	1138	554	255	159	113	86
14	1244	606	279	174	123	94
15	1352	659	303	189	134	103
16	1461	712	328	205	145	111
17	1572	766	353	220	157	120
18	1684	821	378	236	168	129
19	1797	876	404	252	180	137
20	1911	932	430	269	191	146
21	2027	988	456	285	203	155
22	2143	1045	482	302	215	165
23	2261	1103	509	318	227	174
24	2379	1161	536	335	239	183
25	2499	1219	563	352	251	193
26	2620	1278	590	369	263	202

27	2741	1338	618	387	276	211
28	2864	1397	645	404	288	221

30 kVA 208 V Typical Performances



	Load kVA					
# of bat shelves	2	6	12	18	24	30
1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	193	58	24	14	9	6
4	274	83	36	21	14	10
5	359	110	48	29	19	14
6	448	138	61	36	25	18
7	540	166	74	45	31	23
8	634	196	87	53	37	27
9	731	226	101	61	43	32
10	830	257	115	70	49	37
11	931	289	129	79	55	42
12	1034	321	144	88	62	47
13	1138	354	159	98	69	52
14	1244	387	174	107	75	57
15	1352	421	189	117	82	62
16	1461	455	205	126	89	68
17	1572	489	220	136	96	73
18	1684	524	236	146	103	78
19	1797	560	252	156	110	84
20	1911	596	269	166	117	89
21	2027	632	285	176	125	95
22	2143	668	302	187	132	101
23	2261	705	318	197	140	106
24	2379	742	335	208	147	112

25	2499	780	352	218	155	118
26	2620	817	369	229	162	124
27	2741	855	387	240	170	130
28	2864	894	404	251	178	136

Battery Run-Times — Non-Modular Batteries

- The below battery run-times are based on high quality batteries from approved manufacturers
- The run-times are based on high rate batteries designed for UPS systems
- The run-times are intended as a guide only, and APC disclaim the responsibility for these runtimes

10 kVA 400 V

Battery Ah		Load %						
20 hr rate	Approx. equivalent 10 hr rate	40	50	60	70	80	90	100
7.2	6.7	24	18	14	11	9	7	6
11	10	42	32	25	20	17	14	12
15	14	63	48	38	31	26	22	19
20	19	90	69	55	46	39	33	29
24	22	113	87	70	58	49	42	37
30	28	149	115	92	77	65	56	49
38	35	199	154	124	103	88	76	67

15 kVA 400 V

Battery Ah		Load %						
20 hr rate	Approx. equivalent 10 hr rate	40	50	60	70	80	90	100
11	10	25	19	14	11	9	7	6
15	14	38	29	22	18	15	13	11
20	19	55	42	33	27	23	19	17
24	22	70	53	42	35	29	25	21
30	28	92	70	56	46	39	34	29
38	35	124	95	76	63	53	46	40
50	47	174	133	107	89	75	65	57

20 kVA 400 V

Battery Ah		Load %						
20 hr rate	Approx. equivalent 10 hr rate	40	50	60	70	80	90	100
15	14	26	19	15	12	10	8	7
20	19	39	29	23	18	15	13	11
24	22	49	37	29	24	20	17	14

30	28	65	49	39	32	27	23	20
38	35	88	67	53	44	37	31	27
50	47	123	94	75	62	52	45	39
65	60	170	130	104	86	73	63	55

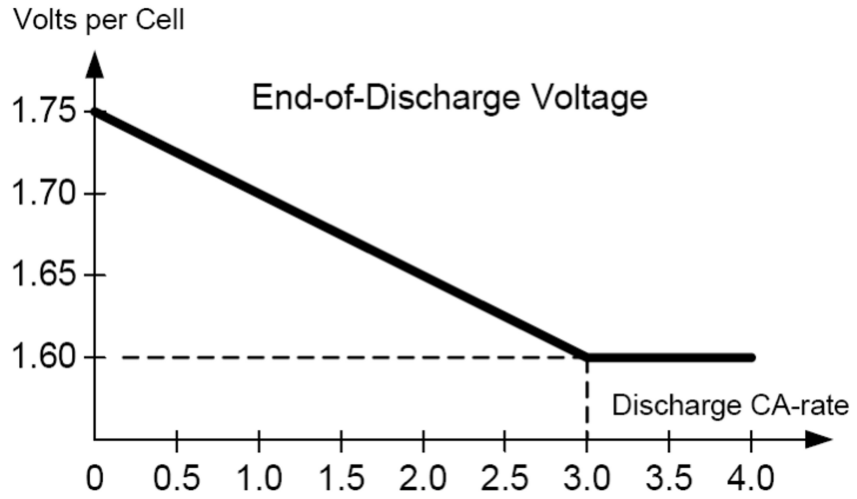
30 kVA 400 V

Battery Ah		Load %						
20 hr rate	Approx. equivalent 10 hr rate	40	50	60	70	80	90	100
24	22	29	21	17	13	11	9	7
30	28	39	29	23	18	15	13	11
38	35	53	40	31	26	21	18	15
50	47	75	57	45	37	31	27	23
65	60	104	79	63	52	44	38	33
80	74	135	103	82	68	57	49	43
100	93	178	136	109	90	76	66	57

Battery Discharge Current

	10 kVA	15 kVA	20 kVA	30 kVA
I bat @ bat nominal , 100% load	22	33	44	66
I bat @ bat min , 100% load	28	41	55	83
I bat @ bat min , 150% load	40	62	83	125

End of Discharge Voltage



AC Bypass

Specifications

	10 kVA		15 kVA		20 kVA		30 kVA	
	208 V	220 V	208 V	220 V	208 V	220 V	208 V	220 V
Connection type	Hard Wire 5-wire (3PH + N + G)							
Input frequency (Hz)	40–70							
Nom input current (A)	27.8	26.2	41.6	39.4	55.5	52.5	83.3	78.7

Physical

Weights and dimensions

	Weight kg (lb)	Height mm (in)	Width mm (in)	Depth w/o conduit box mm (in)	Depth with conduit box mm (in)
SUVTP10KF1B2S	336 (741)	1499 (59)	356 (14)	838 (33)	925 (36)
SUVTP10KF2B2S	427 (941)	1499 (59)	356 (14)	838 (33)	925 (36)
SUVTP10KF1B4S	354 (780)	1499 (59)	523 (21)	838 (33)	925 (36)
SUVTP10KF2B4S	446 (983)	1499 (59)	523 (21)	838 (33)	925 (36)
SUVTP10KF3B4S	538 (1186)	1499 (59)	523 (21)	838 (33)	925 (36)
SUVTP10KF4B4S	630 (1389)	1499 (59)	523 (21)	838 (33)	925 (36)
SUVTP15KF2B2S	428 (944)	1499 (59)	356 (14)	838 (33)	925 (36)
SUVTP15KF2B4S	446 (983)	1499 (59)	523 (21)	838 (33)	925 (36)
SUVTP15KF3B4S	538 1186)	1499 (59)	523 (21)	838 (33)	925 (36)
SUVTP15KF4B4S	630 (1389)	1499 (59)	523 (21)	838 (33)	925 (36)
SUVTP20KF2B4S	476 (1049)	1499 (59)	523 (21)	838 (33)	925 (36)
SUVTP20KF3B4S	568 (1252)	1499 (59)	523 (21)	838 (33)	925 (36)
SUVTP20KF4B4S	660 (1455)	1499 (59)	523 (21)	838 (33)	925 (36)
SUVTP30KF3B4S	568 (1252)	1499 (59)	523 (21)	838 (33)	925 (36)
SUVTP30KF4B4S	660 (1455)	1499 (59)	523 (21)	838 (33)	925 (36)
SUVTXR2B6S	418 (922)	1499 (59)	523 (21)	838 (33)	
SUVTXR6B6S	807 (1779)	1499 (59)	523 (21)	838 (33)	
SUVTBXR2B6S	418 (922)	1499 (59)	523 (21)	838 (33)	
SUVTBXR6B6S	807 (1779)	1499 (59)	523 (21)	838 (33)	

Cables

Recommended Cable Sizes

Warning:

At 100% switch mode load, the neutral must be rated fir 200% phase current.

Caution:

All wiring must comply with all applicable national and/or electrical code.

Note:

The recommended cable sizes are based on an environment with an ambient temperature of 30° C (86° F).

	10 kVA	15 kVA	20 kVA	30 kVA
Utility/mains input	8 AWG	6 AWG	4 AWG	1 AWG
Static bypass input	8 AWG	6 AWG	4 AWG	1 AWG
DC input	1 AWG	1 AWG	1 AWG	1 AWG
Output	8 AWG	6 AWG	4 AWG	1 AWG

Fuse and Breaker Sizes

Single System

	10 kVA	15 kVA	20 kVA	30 kVA
Utility input Q1[1]	35 A breaker (30 kAIC)	60 A breaker (30 kAIC)	80 A breaker (50 kAIC)	125 A breaker (63 kAIC)
Static bypass input Q5	35 A breaker (30 kAIC)	60 A breaker (30 kAIC)	80 A breaker (50 kAIC)	125 A breaker (63 kAIC)
UPS output Q2[2]	35 A fast-acting class J fuse	60 A fast-acting class J fuse	80 A fast-acting class J fuse	125 A fast-acting class J fuse

[1] If the available fault current of the installation is below 30 kA, a lower kAIC rated breaker can be used.

[2] Recommended maximum rating of a single-fuse configuration if the internal bypass is to be protected during a load short-circuit.

Q3 and Q4 in Parallel Capacity Systems

	10 kVA	15 kVA	20 kVA	30 kVA
2	70 A	125 A	150 A	225 A
3	125 A	175 A	225 A	350 A
4	150 A	225 A	300 A	450 A

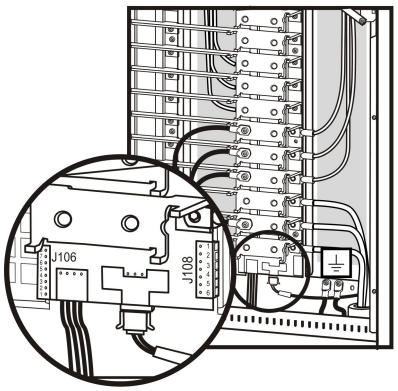
Q3 and Q4 in Parallel Redundant Systems (n+1)

	10 kVA	15 kVA	20 kVA	30 kVA
2	35 A	60 A	70 A	125 A
3	70 A	125 A	150 A	225 A
4	125 A	175 A	225 A	350 A

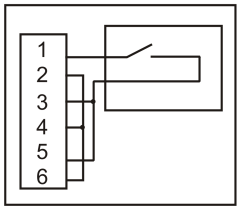
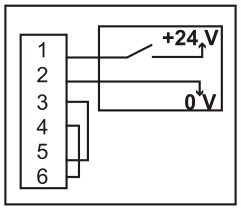
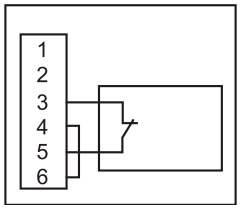
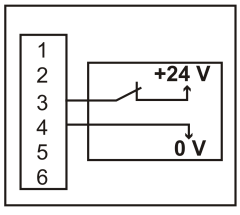
EPO

J108 Pin Connections

Pin	Description
1	Normally open EPO
2	Normally open EPO return
3	Normally closed EPO
4	Normally closed EPO return
5	+ 24 V SELV supply
6	SELV ground



EPO Options

	Dry Contacts Normally Open EPO is activated when pin 1 is connected to pins 3 and 5. Connections: 2-4-6, 3-5 and 1 (normally open)
	+24 V Normally Open EPO is activated when an isolated SELV 24 VDC voltage is supplied on pin 1 with reference to pin 2. Connections: 3-5 and 4-6.
	Dry Contacts Normally Closed EPO is activated when a connection from pin 3 to pin 5 is opened. Connections: 4-6.
	+24 V Normally Closed EPO is activated when a SELV 24 VDC voltage is removed from pin 3 with reference to pin 4.

Compliance

Directives for CE marking	89/336/EDC 73/237/EEC
Safety	EN/IEC62040-1-1 UL1778
EMC	EN50091-2/IEC62040-2 FCC15A
Performance	EN/IEC62040-3
Electromagnetic compatibility (EMC)	EN/IEC 61000-4-2 level 3, performance criteria A EN/IEC 61000-4-3 level 2, performance criteria A EN/IEC 61000-4-4 level 2, performance criteria A EN/IEC 61000-4-5 level 3, performance criteria A

Options

Maintenance Bypass Panels

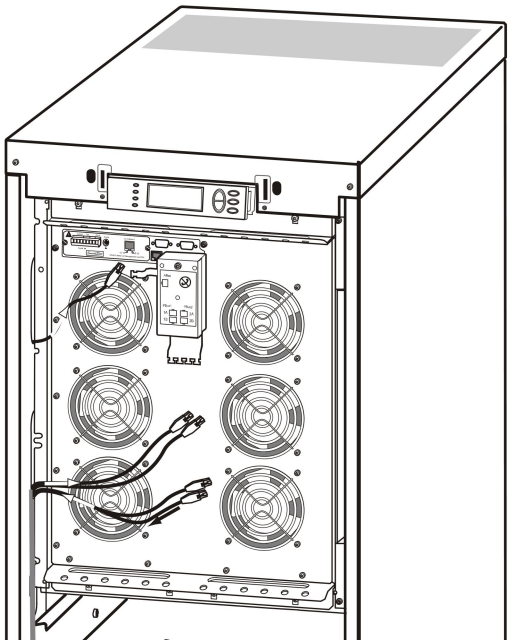
APC Maintenance Bypass Panel 10-15kVA 208V Wallmount	SBPSU10K15F-WP
APC Smart-UPS VT Maintenance Bypass Cabinet 10-15kVA 208V Floormount	SUVTSBP10K15F
APC Smart-UPS VT Input Transformer MCCB 208/208 10-30kVA Floormount	SUVTSBPXFM10K30F
APC Smart-UPS VT Maintenance Bypass Panel 10-15kVA 208V Floor Mount	SBPSU10K15FC1M1
APC Smart-UPS VT Maintenance Bypass Panel 10-30kVA 208V Floor Mount w/42 Pos. Distribution Panel	SBPSU10K30FC1M1-FP
APC Smart-UPS VT Maintenance Bypass Panel 10-30kVA 208V Wall Mount w/42 Pos. Distribution Panel	SBPSU10K30FC1M1-WP

Battery Enclosures

APC Smart-UPS VT Extended Run Frame, w/Breaker, 2 Batt. Modules Exp. to 6, and 5x8 Startup Service	SUVTBXR2B6S
APC Smart-UPS VT Extended Run Enclosure, w/Breaker, 6 Battery Modules and 5x8 Startup Service	SUVTBXR6B6S
APC Smart-UPS VT Extended Run Frame w/2 Batt. Modules Exp. to 6 and 5x8 Startup Service	SUVTXR2B6S
APC Smart-UPS VT Extended Run Enclosure w/6 Batt. Modules and 5x8 Startup Service	SUVTXR6B6S

Parallel Capabilities

Up to four UPS units can be connected in parallel via the Parallel Communication Kit.



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  - **www.apc.com/support/**

    Global support searching APC Knowledge Base and using e-support.
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02/2010